L 16472-65

ACCESSION NR AM4048144

Ch. IX. Automation of registering and processing of data of wind tunnel tests -- 684

SUB CODE: AA SUBMITTED: 06Mar64 NR REF SOV: 053

OTHER: 120

Card 2/2

SLEZINGER, I.N.

USSR/Physics Nonlinear friction FD-1231

Card 1/1 Pub. 153-15/22

Author : Slezinger, I. N.

Title : Motion of a very simple mechanical system under the action of elastic forces and nonlinear friction

Periodical : Zhur. tekh. fiz., 24, 1660-1676, Sep 1954

Abstract : Analyzes the second-order differential equation $mx'' + cx = af(x',t)$ which expresses a system with one degree of freedom. Finds that this type of motion depends not only in quantity but also in quality on the parameters of the system (m,c), on the characteristics of friction and the velocity of the slider. Finds his analysis valuable for machine construction. Four references.

Institution :

Submitted : December 2, 1953

SLEZINGER, I. N.

USSR/Engineering - Shock absorbers

Card : 1/1 Pub. 128 - 2/32

Authors : Erlikh, L. B. and Slezinger, I. N.

Title : Shock absorbers

Periodical : Vest. mash. 34/7, 5 - 9, July 1954

Abstract : A report is presented on the theory of operation and function of shock absorbers. Oscillation calculations of shock absorbers, are given, together with a description of a shock absorber for aircraft engine mounts, designed by I. V. Ana'ev. Six references. Illustrations; diagrams; drawings.

Institution : ...

Submitted : ...

SLEZINGER, I. N.

"On One Method of Solving Linear Boundary Value Problems of the Self-Adjoint Type," by I. N. Slezinger, Odessa, Prikladnaya Matematika i Mekhanika, Vol 20, No 6, Nov/Dec 56, pp 704-713 submitted for publication 4 Jun 55

The author presents a general method of solving a multidimensional self-adjoint linear boundary differential problem, having boundary conditions sufficiently general in nature, on the basis of the known solution to the so-called "more rigid" problem corresponding to that being solved.

Sum 1258

SLEZINGER, I. N.

"On the Lateral Flexure of a Freely Supported Elliptical Plant," by I. N. Slezinger, Odessa, Inzhenernyy Sbornik, Vol 23, 1956, pp 105-110

This work presents a general solution to the problem of the flexure of an elliptical plate freely supported along its contour and under the action of an arbitrary load which is symmetric relative to the major axis of the ellipse. For the case of uniform pressure and load concentration at the center, the solution is carried to final analytical formulas. The solution is based on the use of a special orthonormalized system of biharmonic functions, which simplifies the derivation of higher order approximations and therefore permits the evaluation of the degree of accuracy of the resultant solutions.

The article was submitted for publication in March 1954.

Sum 1219

SLEZINGER, I.N.; ERLIKH, L.B.

Designing smoothly moving feed mechanisms. Stan.i instr. 27 no.10: 26-29 O '56. (MLRA 9:12)

(Machine tools--Design)

SLEZINGER, I.N. [Slezinher, I.N.] (Odesa)

Problem of the bending of a flexible rectangular plate [in Ukrainian with summaries in Russian and English]. Prykl. mekh. 3 no.4:460-466 '57. (MIRA 11:2)

1.Odes'kiy elektrotekhnichniy institut zv'yazku.
(Elastic plates and shells)

SLEZINGER, I.N. (Odesa)

Castigliano's principle in the nonlinear theory of elasticity [with summary in English]. Pryl. mekh. 5 no.1:38-44 '59. (MIRA 12:6)

1. Odes'kiy elektrotekhnichniy institut zv'yazku. (Elasticity)

S/044/62/000/005/032/072
C111/C333

AUTHOR: Slezinger, I. N.

TITLE: On variation theorems of non-linear elasticity

PERIODICAL: Referativnyy zhurnal, Matematika, no. 5, 1962, 96, abstract 5B432. ("Bul. Inst. politehn. Jaşi", 1959, 5, no. 3-4, 83-86)

TEXT: The author gives the functional $I(u_m, K_{ij}, \varkappa_{ij})$ which depends on the components of the displacement vector, the stress tensor and the deformations. The functional I has three summands: 1) Volume integral; 2) Surface integral which extends over that portion of the surface where the stresses are given; 3) Surface integral over that part of the surface where the displacements are given. It is shown: If the variational principle is complemented by the compatibility conditions for the deformations, then the principle of stationary energy is obtained (Novozhilov, V. V., Teoriya uprugosti [Elasticity theory] , M., 1958). By adding other conditions the author obtains various variational principles (by E. Reissner, K. Z. Galimov, and others).

[Abstracter's note: Complete translation.]

Card 1/1

ERLIKH, L.B.; SLEZINGER, I.N.

Designing mechanisms with screw pairs for fine intermittent feed. Nauch.zap.Od.politekh.inst. 14:18-26 '59. (MIRA 14:3)
(Feed mechanisms)

SLEZINGER, I.N. (Odessa)

Application of Castigliano's principle in the theory of flexible elastic plates. Prykl. mekh. 7 no. 1:96-102 '61. (MIRA 14:2)

1. Odesskiy elektrotekhnichesniy institut svyazi. (Elastic plates and shells)

30322

S/145/61/000/009/001/003
D221/D301

24.4200 1327

AUTHORS: Slezinger, I.N., Candidate of Technical Sciences, Docent, and Erlikh, L.B., Candidate of Technical Sciences, Docent

TITLE: Loss of stability of round zones on the surface layer of machine components

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Mashinostroyeniye, no. 9, 1961, 55-61

TEXT: The phenomenon of loss of surface stability differs from that usually considered in engineering. The latter is related to the deformation of the whole component, whereas the former has a local character. The close bond between the surface layer and remaining mass of the body complicates the formation of the model for investigating the phenomenon. The author bases his simplified calculation procedure on the significant stress gradient due to surface loading. An assumption is made that in the considered elastic partial space, the individual sections of a thin surface layer tend to

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Loss of stability...

deform, and they have a circular shape and a symmetrical deformation. Its element is subject to the following loads. Radial compressive forces are distributed on its sides owing to interaction with the remaining layer. The radial, tangential and normal forces on the lower base of the element follow the interaction with the elastic partial space. The authors quote a general equation for the symmetrical deformation of circular plate attached to the solid base. The approximate calculation of the action due to the solid base on the plate is achieved with the use of single layer model proposed by V.Z. Vlasov and N.N. Leont'yev (Ref. 1: Balki, plity i obolochki na uprugom osnovanii (Beams, Plates and Shells on an Elastic Base), Fizmatgiz, M., 1960). This results in

$$\begin{cases} D\nabla^4 w + \left[(1+\alpha)P - T\right]\nabla^2 w - \frac{\alpha P}{R^2}\frac{1}{\rho}(\rho^3 w')' + Kw + \frac{\beta P}{R} = 0 \\ w'(0) = w'(R) = w(R) = 0 \qquad \left(\beta = k\frac{h}{R}\right). \end{cases} \quad (5)$$

which defines the boundary problem. The approximate solution is

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Loss of stability...

appearance to be evaluated. From the above, a conclusion is drawn that the compressive load decreases with the depth from the surface layer. On account of its rapid rate of reduction, an approximation can be made whereby the actual state is replaced by the above method. The surface layer is often in a plastic condition, and thus the tangential modulus of elasticity should be used in the expression of the cylindrical stiffness D. There are 1 figure and 4 references: 3 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Odesskiy politekhnicheskiy institut. Elektrotekhnicheskiy institut svyazi (Odessa Polytechnic Institute. Electrotechnical Institute of Communications)

SUBMITTED: April 20, 1961

Card 4/4

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651320010-2"

SLEZINGER, I.N. [Slezinher, I.N.] (Odessa)

Nonlinear plane deformation of elastic solids with a rectangular cross section. Prykl.mekh. 8 no.3:330-336 '62. (MIRA 15:6)

1. Odesskiy elektrotekhnicheskiy institut.
(Elastic solids)

MATSIYEVSKIY, Anatoliy Gavrilovich; ERLIKH, Lazar' Borisovich; Prinimali uchastiye: SLEZINGER, I.N., kand.tekhn.nauk, dots.; MENAKER, L.S., inzh.; RABINOVICH, I.Sh., inzh.; SVIRIDENKO, S.Kh., red.; ORLIKOV, M.L., dots., retsenzent; BYKOVSKIY, A.I., inzh., red.; GORNOSTAYPOL'SKAYA, M.S., tekhn. red.

[Efficient organization of machine-tool design] Ratsionalizatsiia raschetov pri konstruirovanii stankov. Pod red. S.Kh.Sviridenko. Moskva, Mashgiz, 1962. 127 p. (MIRA 15:7)
(Machine tools--Design)

SLEZINGER, I.N. [Slezinher, I.N.] (Odessa); BARSKAYA, S.Ya. [Bars'ka, S.IA.] (Odessa)

Nonlinear plane deformation of an elastic space with a sealed-in circular cylinder. Prykl. mekh. 10 no.3:317-323 '64. (MIRA 17:6)

1. Odesskiy elektrotekhnicheskiy institut svyazi.

BARSKAYA, S. Ya. [Bars'ka, S. IA.]; SLEZINGER, I.N.

Buckling of the surface layer of a circular cylinder under strong axisymmetric heating. Dop. AN URSR no.6:749-752'63 (MIRA 17:7)

1. Odesskiy elektrotekhnicheskiy institut svyazi. Predstavleno akademikom AN UkrSSR G.N. Savinym [Savin, H.M.]

SLEZINGER, I.N., kand. tekhn. nauk, dotsent

Calculating nonlinear deformations of certain parts. Izv. vys. ucheb. zav.; mashinostr. no.1:34-50 '65. (MIRA 18:5)

BRESLAV, I.Z.; SLEZINGER, P.I.; FEL'DMAN, A.V.; KRUSHCHEV, A.P.

Converters of phase-type control systems of electric drives. (MIRA 17:11)
Elektrichestvo no.7:48-53 Jl '64.

1. Novosibirskiy nauchno-issledovatel'skiy elektrotekhnicheskiy institut.

SIEZINGER, P.I.

Precision of the functional system of a program control of a heavy-duty Horizontal boring machine. Stan. i instr. 36 no. 12:15-19 D '65 (MIRA 19:1)

SLEZINGER, S.I.; PROKOF'YEVA-BEL'GOVSKAYA, A.A.

Succession of DNA replication in plots of large chromosomes in man. Dokl. AN SSSR 161 no.2:459-462 Mr '65. (MIRA 18:4)

1. Institut radiatsionnoy i fiziko-khimicheskoy biologii AN SSSR. Submitted December 16, 1964.

PROKOF'YEVA-BEL'GOVSKAYA, A.A.; SLEZINGER, S.I.

DNA replication in homologous human chromosomes. Dokl. AN SSSR 162 no.3:681-684 My '65. (MIRA 18:5)

1. Institut radiatsionnoy i khimicheskoy biologii AN SSSR. Submitted December 16, 1964.

SLEZKIN, L. N. (Engineer)

"Effect of joints between channels in triaxial gyro-stabilized platform."

report presented at the Scientific-technical Conference on Modern Gyroscope Technology Ministry of Higher and Secondary Special Education RSFSR, held at the Leningrad Institute of Precision Mechanics and Optics, 20-24 November 1962.

(Izv. vysshikh uchebnykh zavedeniy. Priborostroyeniye, v. 6, no. 2, 1963)

SLEZKIN, L. N. and KLIMOV, D. M. (Candidate of Physical and Mathematical Sciences)

"Use of asymptotic methods in solving problems of the motion of an astatic gyroscope in gymbol suspension"

report presented at the Scientific-technical Conference on Modern Gyroscope Technology Ministry of Higher and Secondary Special Education RSFSR, held at the Leningrad Institute of Precision Mechanics and Optics, 20-24 November 1962

(Izv. vysshikh uchebnykh zavedeniy. Priborostroyeniye, v. 6, no. 2, 1963)

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S/020/62/147/001/007/022
B104/B102

AUTHOR: Slezkin, L. N.

TITLE: Use of asymptotic methods for studying gyroscopic systems

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 147, no. 1, 1962, 57 - 59

TEXT: The solution to system

$$\begin{aligned}\ddot{\alpha} + \dot{\beta} &= \varepsilon f_1(\ddot{\alpha}, \ddot{\beta}, \dot{\alpha}, \dot{\beta}, \alpha, \beta);\\ \ddot{\beta} - \dot{\alpha} &= \varepsilon f_2(\ddot{\alpha}, \ddot{\beta}, \dot{\alpha}, \dot{\beta}, \alpha, \beta),\end{aligned} \tag{1}$$

has the form

$$\begin{aligned}\alpha &= \alpha_0 - a\sin\psi + \varepsilon u_1(a, \psi, \alpha_0, \beta_0) + \varepsilon^2 u_2(a, \psi, \alpha_0, \beta_0) + \dots,\\ \beta &= \beta_0 + a\cos\psi + \varepsilon v_1(a, \psi, \alpha_0, \beta_0) + \varepsilon^2 v_2(a, \psi, \alpha_0, \beta_0) + \dots,\end{aligned} \tag{2}$$

where ε is a small parameter, u_i and v_i are periodic functions of ψ with the period 2π; and α_0, β_0, a, ψ are determined from

can be derived, where

$$f_{10} = f_1(a\sin\psi, -a\cos\psi, -a\cos\psi, -a\sin\psi, \alpha_0 - a\sin\psi, \beta_0 + a\cos\psi),$$

$$f_{20} = f_2(a\sin\psi, -a\cos\psi, -a\cos\psi, -a\sin\psi, \alpha_0 - a\sin\psi, \beta_0 + a\cos\psi),$$

[A]

$$\begin{aligned} f_{11} = {} & \frac{\partial f_1}{\partial x}\left(-2A_1\cos\psi + 2B_1 a\sin\psi + \frac{\partial^2 u_1}{\partial\psi^2}\right) + \\ & + \frac{\partial f_1}{\partial \xi}\left(-2A_1\sin\psi - 2B_1 a\cos\psi + \frac{\partial^2 v_1}{\partial\psi^2}\right) + \\ & + \frac{\partial f_1}{\partial x}\left(a_1 - A_1\sin\psi - aB_1\cos\psi + \frac{\partial u_1}{\partial\psi}\right) + \\ & + \frac{\partial f_1}{\partial \xi}\left(A_1\cos\psi - aB_1\sin\psi + \frac{\partial v_1}{\partial\psi} + b_1\right) + \\ & + \frac{\partial f_1}{\partial \alpha}u_1 + \frac{\partial f_1}{\partial \beta}v_1 - b_1\frac{\partial v_1}{\partial\xi_0} - A_1\frac{\partial v_1}{\partial t} - a_1\frac{\partial v_1}{\partial x_0} - B_1\frac{\partial v_1}{\partial\psi} - \frac{\partial u_1}{\partial t}A_1 - \frac{\partial u_1}{\partial x_0}a_1 - \\ & - \frac{\partial u_1}{\partial\xi_0}b_1 + \sin\psi\left[A_1\frac{\partial A_1}{\partial t} + \frac{\partial A_1}{\partial x_0}a_1 + \frac{\partial A_1}{\partial\xi_0}b_1 - aB_1^2\right] + \\ & + \cos\psi\left[a\left(\frac{\partial B_1}{\partial x_0}a_1 + \frac{\partial B_1}{\partial t}A_1 + \frac{\partial B_1}{\partial\xi_0}b_1\right) + 2A_1B_1\right] - \\ & - 2A_1\frac{\partial^2 u_1}{\partial t\,\partial\psi} - 2a_1\frac{\partial^2 u_1}{\partial x_0\,\partial\psi} - 2b_1\frac{\partial^2 u_1}{\partial\xi_0\,\partial\psi}. \end{aligned}$$

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An analogous expression is arrived at for f_{21}. Fourier series representations

$$
\begin{aligned}
f_{10} &= g_{10}(a, a_0, \beta_0) + \sum_{n=1}^{\infty} [g_{1n}(a, a_0, \beta_0)\cos n\psi + h_{1n}(a, a_0, \beta_0)\sin n\psi], \\
f_{20} &= g_{20}(a, a_0, \beta_0) + \sum_{n=1}^{\infty} [g_{2n}(a, a_0, \beta_0)\cos n\psi + h_{2n}(a, a_0, \beta_0)\sin n\psi], \\
u_1 &= v_0^{\alpha}(a, a_0, \beta_0) + \sum_{n=1}^{\infty} [v_n^{\alpha}(a, a_0, \beta_0)\cos n\psi + w_n^{\alpha}(a, a_0, \beta_0)\sin n\psi], \\
v_1 &= v_0^{\beta}(a, a_0, \beta_0) + \sum_{n=1}^{\infty} [v_n^{\beta}(a, a_0, \beta_0)\cos n\psi + w_n^{\beta}(a, a_0, \beta)\sin n\psi].
\end{aligned}
\qquad (5)
$$

substituted in (4) yield

$$h_1 = g_{10}, \quad a_1 = -g_{20}; \tag{6}$$

$$A_1 = -\frac{g_{11}+h_{21}}{2}, \quad B_1 = \frac{h_{11}-g_{21}}{2},$$

$$v_1^\alpha = \frac{h_{11}-g_{21}}{2}, \quad w_1^\alpha = -\frac{g_{11}+h_{21}}{2}, \quad [v_0^\alpha = v_0^\beta = v_1^\beta = w_1^\beta = 0;] \tag{7}$$

$$w_n^\alpha = \frac{g_{2n}-nh_{1n}}{n(n^2-1)}, \quad v_n^\alpha = -\frac{h_{2n}+ng_{1n}}{n(n^2-1)}, \tag{8}$$

$$w_n^\beta = -\frac{h_{2n}n+g_{1n}}{n(n^2-1)}, \quad v_n^\beta = \frac{h_{1n}-ng_{2n}}{n(n^2-1)}, \quad n = 2, 3, \dots$$

In a similar way, higher-order approximations can be reached. As an example, a study is made of the equation of motion of a balanced gyroscope with cardan suspension on an immobile support, assuming low friction in the suspension axes. There is 1 figure.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

PRESENTED: May 25, 1962, by A. Yu. Ishlinskiy, Academician

KLIMOV, D.M. (Moskva); SLEZKIN, L.N. (Moskva)

Application of asymptotic methods to the solution of problems on the motion of an astatic gyroscope in gimbals. Izv.AN SSSR.-Otd.tekh.nauk.Mekh.i mashinostr. no.3:45-50 My-Je '63. (MIRA 16:8)

(Gyroscope)

SLEZKIN, L. N.

AID Nr. 990-6 14 June

SCIENTIFIC-TECHNICAL CONFERENCE ON MODERN GYROSCOPE TECHNOLOGY (USSR)

Izvestiya vysshikh uchebnykh zavedeniy. Priborostroyeniye, v. 6, no. 2, 1963, 156-158. S/146/63/006/002/010/010

The Fourth Conference on Gyroscope Technology, sponsored by the Ministry of Higher and Secondary Special Education RSFSR, was held at the Leningrad Institute of Precision Mechanics and Optics from 20 to 24 November 1962. The conference was attended by representatives from 93 organizations in 30 So[illegible] cities, including educational establishments, scientific research institutes, design bureaus, and industrial concerns. The following are some of the topics covered in the 92 papers presented and discussed at the conference. Vibrations of a gyroscope pendulum with a movable suspension in a nonuniform gravitational field: M. Z. Litvin-Sedoy, Senior Scientific Worker; improving dynamic characteristics of some gyro instruments and devices: A. V. Reprikov, Docent, Candidate of Technical Sciences; some problems of the dynamics of a gyroscope with an electric drive installed in a gymbol suspension: S. A.

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AID Nr. 990-6 14 June 13

SCIENTIFIC-TECHNICAL CONFERENCE [Cont'd] S/146/63/006/002/010/010

Kharlamov, Engineer; problems of the theory of the inertial method for measuring aircraft acceleration: I. I. Pomykayev, Docent, Candidate of Technical Sciences; determining the drift of a floated-type integrating gyroscope without the use of a dynamic stand: G. A. Slomyanskiy, Docent, Candidate of Technical Sciences; natural damping of nutational vibrations of a gyroscope: N. V. Gusev, Engineer; motion of a not quite symmetrical gyroscope pendulum with vertically movable support: A. N. Borisova, Aspirant; gyroscope-type inclinometer for surveying vertical freezing wells: V. A. Sinitsyn, Candidate of Technical Sciences; effect of joints between channels in triaxial gyro-stabilized platform: L. N. Slezkin, Engineer; theoretical proposal for the possible design of a generalized gyro instrument: M. M. Bogdanovich, Docent, Candidate of Technical Sciences; problem of drift in a power-type triaxial gyro stabilizer: V. N. Karpov, Engineer; methods of modeling random disturbances in gyro systems: S. S. Shishman, Senior Engineer; method of noise functions for investigating a system subjected to random

Card 2/3

AID Nr. 990-6 14 June

SCIENTIFIC-TECHNICAL CONFERENCE [Cont'd] S/146/63/006/002/010/010

signals: G. P. Molotkov, Docent, Candidate of Technical Sciences; drifts in a gyro-stabilized platform as a result of the effect of cross joints under determined and random disturbances: B. I. Nazarov, Docent, Candidate of Technical Sciences; stability and natural oscillations in inhomogeneously rigid gyro systems with backlash under external influences: S. A. Chernikov; methods of designing a gyro vertical with automatic latitude and course corrections: A. V. Til', Candidate of Technical Sciences; use of asymptotic methods in solving problems of the motion of an astatic gyroscope in gymbol suspension: D. M. Klimov, Candidate of Physical and Mathematical Sciences, and L. N. Slezkin; theory of aperiodic gyro pendula: V. S. Mochalin, Docent, Candidate of Technical Sciences; and selecting basic parameters of course gyros by using nomograms: V. P. Demidenko, Engineer. [AS]

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L 10316-63 EWT(d)/BDS--AEDC/AFFTC/AFMDC/APGC/ASD/SSD--Pg-4/Pk-4/Pl-4/
Po-4/Pq-4--BC
ACCESSION NR: AP3003453 S/0179/63/000/003/0045/0050

AUTHOR: Klimov, D. M. (Moscow); Slezkin, L. N. (Moscow) 76

TITLE: Application of asymptotic methods to the solution of problems concerning the motion of an astatic gyroscope in gimbal suspension 9

SOURCE: AN SSSR. Izv. Otdel. tekhn. nauk. Mekhanika i mashinostroyeniye, no. 3, 1963, 45-50

TOPIC TAGS: application of asymptotic methods, solution of differential equations, gyroscope motion

ABSTRACT: A mechanical system described by the nonlinear differential equations given in the Enclosure has been studied. The equations are solved by the Bogolyubov-Mitropol'skiy asymptotic method for a case in which the characteristic determinant of a nonperturbed system has two conjugate pure imaginary roots and two zero roots with linear elementary divisors. Solutions x and y are determined as series in powers of a small parameter for the nonresonance case. A method is

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ACCESSION NR: AP3003453

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described for obtaining first-approximation equations, on the basis of which solutions of the system of differential equations are obtained. By analogous procedure, equations of higher approximations can be derived and solutions by corresponding approximations established. As an example, the motion of an astatic gyroscope in a gimbal (Cardan) suspension with dynamically unbalanced rotor is studied, with small dry and viscous frictions of the gimbal axes taken into account. The system of second-order differential equations describing such a motion is written in a dimensionless form and then, after certain transformations, reduced to a system of equations similar to those given in the Enclosure. On the basis of the system of first-approximation equations, pecularities of gyroscope motion are analyzed. Orig. art. has: 20 formulas.

ASSOCIATION: none

SUBMITTED: 01Feb63 DATE ACQ: 24Jul63 ENCL: 01

SUB CODE: 00 NO REF SOV: 003 OTHER: 000

Card 2/3

L 10316-63
ACCESSION NR: AP 3003453 ENCLOSURE: 01

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$$\ddot{x} + \dot{y} = \varepsilon f_1 (vt, \ddot{x}, \ddot{y}, \dot{x}, \dot{y}, x, y),$$

$$\ddot{y} - \dot{x} = \varepsilon f_2 (vt, \ddot{x}, \ddot{y}, \dot{x}, \dot{y}, x, y) \quad (1)$$

where ε is a small positive parameter, and f_1 and f_2 are periodic functions with respect to vt with period 2π.

Card 3/3

ACCESSION NR: AP4043899 S/0179/64/000/004/0145/0147

AUTHOR: Slezkin, L. N. (Moscow)

TITLE: The effect of inertia of Cardan suspension disks on the motion of a gyroscopic integrator of linear accelerations

SOURCE: AN SSSR. Izvestiya. Mekhanika i mashinostroyeniye, no. 4, 1964, 145-147

TOPIC TAGS: gyroscope, gyroscopic integrator, linear acceleration integrator, gyroscope disk inertia, Cardan suspension

ABSTRACT: An unbalanced gyroscope in a Cardan suspension is used as the sensitive element in instruments designed for measuring the apparent velocity of moving objects (A. Yu. Ishlinskiy). The angular velocity of the external disk of such a gyroscope is given by

$$\frac{d\alpha}{dt} = \frac{mgl}{H} \tag{1}$$

according to the precession theory. This equation is very accurate for existing gyroscopes when the gyroscope has self-excited oscillations with a low amplitude and high frequency actually coinciding with the natural frequency of the instrument. In some cases, the self-excited oscillations are replaced by a conservative system. A time

ACCESSION NR: AP4043899

drift of the gyroscope appears when the disks of the Cardan suspension are not parallel and there are mutation oscillations (K. Magnus). This was analyzed in the paper by D. M. Klimov. The cause is the inertia of the Cardan suspension disks. The equation for motion of a heavy gyroscope in a Cardan suspension is:

$$\begin{gathered}
[A_1 + C_1 + (A + B_1 - C_1)\cos^2\beta]\,\alpha'' - (A + B_1 - C_1)\,\alpha'\beta'\sin 2\beta - H\cos\beta\beta' = 0 \\
(A_1 + A)\,\beta'' + (A + B_1 - C_1)\,\alpha'^2\cos\beta\sin\beta + H\alpha'\cos\beta - mgl\cos\beta = 0 \\
H = C(\gamma' - \alpha'\sin\beta) = \mathrm{const}
\end{gathered} \tag{2}$$

In a gyroscopic integrator, the plane of the inner disk, determined by the axes of rotation of the inner disk and rotor, is almost perpendicular to the axis of rotation of the outer disk, while the turning angle of the inner disk relative to the outer one is small. Therefore, for existing instruments:

$$\begin{gathered}
\varepsilon'' - \Lambda\delta' = \varkappa\,[\varepsilon''\,(\beta_0^2 + \delta^2 + 2\beta_0\delta) + 2\,(\varepsilon' + \omega)\,\delta'\,(\beta_0 + \delta)] - \Lambda\delta'\,({}^1/_2\beta_0^2 + {}^1/_2\delta^2 + \beta_0\delta) \\
\Lambda\delta'' + \varepsilon' = -(\varkappa/\Lambda)\,(\varepsilon' + \omega)^2\,(\beta_0 + \delta) + \varepsilon'\,({}^1/_2\beta_0^2 + {}^1/_2\delta^2 + \beta_0\delta) \\
(\Lambda = \sqrt{D/J}, \quad \varkappa = K/J)
\end{gathered} \tag{3}$$

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ACCESSION NR: AP4043899

On the basis of equations evolved in the article it is concluded that the motion of the gyroscopic integrator along one of the axes may approximately be taken as consisting of three motions: precession at constant velocity, oscillations with circular frequency superimposed on the precession, and additional motion. The additional motion leads to errors in instrument readings. The relative error of the instrument is expressed as follows:

$$\frac{H^2 (A_0 + C_1) \beta_0 \varepsilon^2}{2 (A_0 + A + B_1)^2 mgl} - \frac{(A + B_1 - C_1) \varepsilon^2}{A_0 + A + B_1} - \frac{(A + B_1 - C_1) mgl \beta_0}{H^2} \quad (4)$$

Orig. art. has: 14 equations and 1 figure.

ASSOCIATION: none

SUBMITTED: 18Apr64

ENCL: 00

SUB CODE: NG

NO REF SOV: 004

OTHER: 001

Card 3/3

L 2943-66 EWT(d)/FSS-2/EEC(k)-2/EED-2/EWA(c) BC

ACCESSION NR: AP5021444 UR/0146/65/008/004/0085/0090
531.383

39
37
B

AUTHOR: Slezkin, L. N.; Wang, Tan-chih
44 44

TITLE: Effect of coupling between gyroscopic platform channels
9,44

SOURCE: IVUZ. Priborostroyeniye, v. 8, no. 4, 1965, 85-90

TOPIC TAGS: gyroscope motion equation, motion stability

ABSTRACT: Linear coupling between gyroscopic platform channels may be due to the moments of viscous friction in the axes of precession of the gyroscope units, or to the fact that the angle-data transmitters for the angles of precession fix only the relative rotation of the platform and the gyroscope unit. The authors study the effect of these two factors on the stability of several types of gyrostabilizers. It is assumed for simplicity that the angles of deviation of the platform relative to the inertial coordinate system, and the angles of rotation of the gyroscope units are small, and that terms of the second order of smallness may be disregarded. The system is assumed to be made up of absolutely rigid elements. The parameters of the

2

L 2943-66
ACCESSION NR: AP5021444

channels of the platform are assumed to be equal. A system of motion equations is given for the triaxial platform shown in fig. 1 of the Enclosure on a stationary base. This system of equations cannot be analyzed into three independent subsystems. A block diagram is given which corresponds to this system of motion equations. The coupling between channels is shown on this diagram. The cross-connections due to the two factors given above cause motion with respect to all angular coordinates when there is a moment of disturbance with respect to one of the axes of the stabilizer. These linear connections are eliminated by using paired gyroscopes. Orig. art. has: 3 figures, 14 formulas.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University) 44

SUBMITTED: 26May64 ENCL: 01 SUB CODE: ME

NO REF SOV: 004 OTHER: 001

Card 2/3

L 2943-66
ACCESSION NR: AP5021444

ENCLOSURE: 01

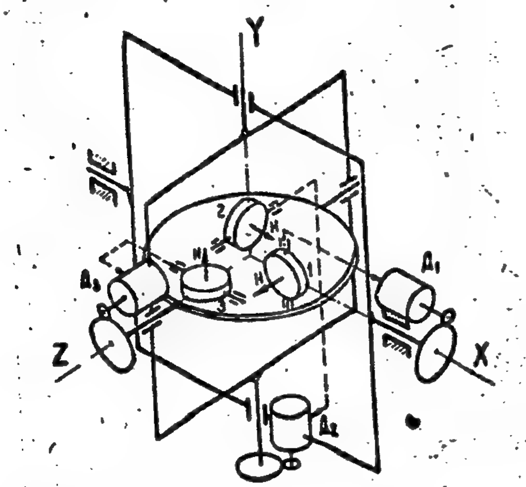

Fig. 1. Schematic diagram of the gyroplatform.

Card 3/3

SLEZKIN, N.A.

Boundary layer near a plate in a flow with jet separation. Vest. Mosk. un. Ser. 1: Mat., mekh. 19 no.5:67-78 S-O '64. (MIRA 17:12)

1. Kafedra gidromekhaniki Moskovskogo universiteta.

(P

7

Discontinuous two-dimension movement of an ideal

...s around a curve-shaped obstruction. N. A. Slezkin. *...mpt. rend. acad. sci. U. R. S. S.* **2**, 512-5(1935)(in ...erman 515).—The Caplygin approximation method is ...tended to the case of a curved rigid boundary. The ...eas of Levi-Civita and Villat are reduced to an integro-...ifferential equation. As an example the streaming of a ...s around an object of circular cross section was investi-...ated. The existence of a solution can be shown by ...e method of successive approximations, and the solution ...self obtained. Gregg M. Evans

METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651320010-2"

[illegible], [illegible]

K voprosu o ploskom dvizhenii gaza. (Moscow. Universitet. Uchenye zapiski, 1937, no. 7: Mekhanika, p. 43-69, diagrs.)

Summary in English.
Title tr.: Problem of the two-dimensional flow of gas.

So. Aeronautical Science and Aviation in the Soviet Union. Library of Congress, 1955.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651320010-2"

SEKERIN, N.A.

Ob ustanovivshikhsia kapilliarnykh volnaskh. (Moscow. Universitet. Uchenye zapiski, 1937, no. 7: Mekhanika, p. 71-102)

Summary in English.
Title tr.: On steady capillary waves.

SO.
Aeronautical Science and Aviation in the Soviet Union. Library of Congress, 1955.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651320010-2"

SLEZKIN, N.A.

Neustanovivsheesia dvizhenie tsilindra v viazkoi zhidkosti. (Moscow. Universitet. Uchenye zapiski, 1940, no. 46: Mekhanika, p. 19-37)

Title tr.: Unsteady motion of a cylinder in a viscous fluid.

SO. Aeronautical Science and Aviation in the Soviet Union. Library of Congress, 1955.

[illegible]

[illegible] ([illegible]
[illegible] Shi, [illegible]

[illegible]

[illegible]: [illegible] steady [illegible]

[illegible] 1 27, [illegible] 7

SO: [illegible] Science and Aviation in the Soviet Union, Library of Congress, 1955

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651320010-2"

SLEZKIN, N. A.

Mbr., Artillery Order Lenin & Order Suvarov Acad., Moscow, im. F. E. Dzerzhinskiy, -1941-45-. "The Subduing of Proper Rotation of a Projectile," Dok. AN, 30, No. 4, 1941; "Penetration of a Thin Plate into a Viscous Medium," ibid., 46, No. 1, 1945; "On the Problem of Refining the Solutions of Reynolds' Equations," ibid., 54, No. 2, 1946; "On the Rolling of a Cylinder over a Surface Covered with a Viscous Layer," ibid., 4, No. 7, 1946; "The Generalized Equations of Reynolds," ibid., No. 3, 1946; "The Distribution Determination of Pressure on the Surface of a Flattened Obus (Shell)," ibid.,

PROCESSES AND PROPERTIES INDEX

240

531.45

On the rolling of a cylinder over a surface covered with a viscous layer. Slezkin, N. A. *C.R. Acad. Sci. URSS*, 52 (*No.* 7) 573-6 (1946).—A circular cylinder of given length, radius and weight rolls on a horizontal plane covered with a material of given viscosity. A formula for the tractive force is found and an expression for the coefficient of rolling friction is obtained. E. S. O.

531.593 : 533.6.011.5 *see Abstr.* 260

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

B

Rocking Motion of a Cylinder on a Plane Surface Covered with a Layer of Viscous Substance. N. A. Sleskin. *Reports of the Academy of Sciences of U.S.S.R.*, v. 52, no. 7, 1946, p. 581-584.

METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651320010-2"

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

SA

A53
d

532.517.2 1452

On the [redacted] of [redacted] of [redacted], N. A. *C.R. Acad. Sci. URSS*, 54 (*No.* 2) 121-3 [redacted] motion in a layer of a viscous [redacted] fluid is considered. The exact equations of [redacted] written down, and from these the equations of [redacted] and of Prandtl may be deduced. The solutions [redacted] in the form of series, but from the third approx. onwards both variation of pressure along the thickness of the layer and the viscosity terms must be considered.

L. S. G.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651320010-2"

1ST AND 2ND ORDERS PROCESSES AND PROPERTIES INDEX 3RD AND 4TH ORDERS

1102. GENERALIZED EQUATIONS OF REYNOLDS. Slezkin, N. A. and Targ, S. M. (Compt. Rend. Acad. Sci. U.R.S.S., 1946, 54, 205).

The approximate solutions of the equations of Reynolds' theory of lubrication can be made more exact, using the method of Leibenson, by taking into account the quadratic inertia terms, on the basis of Prandtl's equations. Prandtl's equations have now been modified by a partial averaging method to give new equations which are also applicable to problems previously studied only by Reynolds' equations. The application of the new expressions to some particular problems, including flow past a plane plate, is briefly discussed.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

SA

753

532.58 : 534.222.2

472. On the determination of the pressure distribution on the flat surface of a shell. Slezkin, N. A. *C.R. Acad. Sci. URSS*, 54 (No. 7) 579-81 (1946) *In French.*—Reynolds' equations are written down and solved for a thin layer between the surface of the shell and the surface of the shock wave. From these an equation, of Bessel's type, is derived for the pressure. The final formula for the pressure is found in terms of Bessel functions of the second kind. L. S. G.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

SLEZKIN, N.A.

Ob ustanovivshikhsia kapilliarnykh volnakh. (Moscow. Universitet. Uchenye zapiski, 1937, no. 7: Mekhanika, p. 71-102)

Summary in English.
Title tr.: On steady capillary waves.

SO. Aeronautical Science and Aviation in the Soviet Union. Library of Congress, 1955.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651320010-2"

SLEZKIN, N. A.

Fluid Dynamics

Level flow of an ideal fluid around a gas-filled envelope.
Uch. zap. Mosk. un., No. 1, 1951.

9. Monthly List of Russian Accessions, Library of Congress, May 1952. UNCLASSIFIED.

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

N

4

7076

ON THE DIFFERENTIAL EQUATIONS OF GAS MOTION.

N. A. Slezkin. Doklady Akad. Nauk S.S.S.R. 77, 2, 205-08(1951) Mar. (In Russian)

An abstract appears in Applied Mechanics Revs. 4, 567 (1951) Oct. and is reproduced here in part.

The equations of continuity, motion, and energy are written in orthogonal curvilinear coordinates differing from the usual form by the addition of terms representing diffusion and thermodiffusion.

COMMON ELEMENTS

COMMON VARIABLES INDEX

MATERIALS INDEX

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

SLEZKIN, N. A.

USSR/Geophysics - Filtration 11 Aug 51

"Differential Equations of Filtration," N. A. Slezkin, Moscow State U imeni M. V. Lomonosov

"Dok Ak Nauk SSSR" Vol LXXIX, No 5, pp 755-758

Attempts a new derivation of the familiar eqs describing the motion of a fluid in a porous medium, thus leading up to the problem of the deformations of ground under the action of filtration flow. Previous setting up of these eqs employed assumptions that the ground is immobile and the porosity is const. Submitted by Acad A. I. Nekrasov 16 Jun 51.

210T44

SLEZKIN, N.A.

3

① Math

Mathematical Reviews
Vol. 15 No. 3
March 1954
Mechanics

Slezkin, N. A. The differential equations of the deformation process. Doklady Akad. Nauk SSSR (N.S.) 80, 561–564 (1951). (Russian)

EH
6-30-54

[illegible]

[illegible], [illegible]

[illegible] problems [illegible] into a [illegible]. Uch. zap. [illegible] un., no. 15[illegible], 1951.

Monthly List of Russian Accessions, Library of Congress, April 1952. UNCLASSIFIED

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651320010-2"

SLEZKIN, N. A.

Obtekanie napolnennoi gazom obolochki ploskim potokom ideal'noi zhidkosti. (Moscow. Universitet. Uchenye zapiski, 1951, no. 152: Mekhanika, v. III, p. 61-75)

Title tr. : Plane flow of an ideal fluid around a gas-filled shell.

Reviewed by J. V. Wehausen in Mathematical Reviews, 1953, v. 14, no. 5, p. 508

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955

USSR/Mathematics - Gaseous Flow Mar/Apr 52

"Impact of Flat Gaseous Stream on a Boundless Wall," N. A. Slezkin, Moscow

"Prik Matemat i Mekh" Vol XVI, No 2, pp 227-230

Slezkin uses S. A. Chaplygin's method (cf. "Gaseous Flow" 1933, Vol II) to solve problem of impact of gaseous stream against flat wall, providing velocity of stream in infinity is perpendicular to wall. Partial soln of this problem was also given by N. Ye. Zhukovskiy (cf. "Modification of Kirchhoff's Law" 1936, Vol III) and by W. Schach (cf.

209T68

USSR/Mathematics - Gaseous Flow (Contd) Mar/Apr 52

"Umlenkung eines freien Flüssigkeitsstrahles an einer ebenen Platte" 1934, Vol V). Received 22 Mar 51.

209T68

SLEZKIN, N. A.

SLEZKIN, N. A.

Evaporation

Principles of the hydrodynamic theory of evaporation of moisture by wind. Dokl. AN SSSR 83, No. 1, 1952 Moskovskiy Gosudarstvennyy Universitet im. M. V. Lomonosova. Recd. 28 Dec. 1951.

SO: Monthly List of Russian Accessions, Library of Congress, August 1952 ~~1953~~, Uncl.

235T95

SLEZKIN, N. A.

USSR/Physics - Hydrodynamics 11 Sep 52

"Differential Equations of Motion of Pulp," N. A. Slezkin

"Dok Ak Nauk SSSR" Vol 86, No 2, pp 235-237

Mechanism of transfer of ground particles by water is similar to that of transfer of water particles or oil by gas in airlifts. Shows that in the subject case of transfer of pulp the eq of motion separates into 2 independent eqs describing the transfer of the mass of each component of the mixt. Submitted by Acad A. I. Nekrasov 5 Jul 52.

235T95

SLEZKIN, N.A.

Mathematical Reviews.
Vol. 14 No. 8
Sept. 1953
Mechanics.

Slezkin, N. A. Generalization of Helmholtz's theorem on the resolution of the motion of a particle. Doklady Akad. Nauk SSSR (N.S.) 86, 477–480 (1952). (Russian)

The author points out an analogy between motions of a physical system composed of discrete particles and Helmholtz's theorem for liquid motion. He sets up difference quotients analogous to components of vorticity and deformation rate for a tetrad of points, and studies changes that come about due to translations, rotations, and stretchings. He indicates that these operations can describe the transition from the liquid to the discrete system. The discussion is entirely theoretical, with no illustrations or examples.

R. E. Gaskell (Seattle, Wash.).

SLEZKIN, Prof. N. A.

USSR/Physics - Hydrodynamics Sep 53

"Generalization of the Helmholtz Theorem on the Resolution of the Motion of a Particle," Prof N. A. Slezkin, Chair of Hydromechanics

Vest Mos Univ, Ser Fizikomat i Yest Nauk, No 6, pp 17-33

Continuation of his article (Vest MU, No 10, 1951) in which the author established the differential eqs of motion of a deformable medium of particles with variable mass as an eq of macroscopic transfer of mass, momentum and total energy. Discusses

275T98

here: the relation of Helmholtz's theorem to the theorems on the finite displacements of an absolutely solid body; Helmholtz's theorem for a discrete system of points, and generalization; the variability of the mass of a particle; the method of averaging; the dimensions of a macroscopic particle.

SLEZKIN, N.A.

Generalization of Helmholtz's theorems on the analysis of particle dynamics. Vest.Mosk.un.8 no.9:17-33 S '53. (MLRA 6:11)

1. Kafedra gidromekhaniki. (Dynamics of a particle)

Slezkin, N. A.

Slezkin, N. A. Remark on the notes of Yu. V. Rumer, "The problem of a submerged jet", and of L. G. Loicyanskiĭ, "Propagation of a whirling jet into an infinite space filled with the same fluid". Prikl. Mat. Meh. 18, 764 (1954). (Russian) 62

1 - F/W

Dans leur livre bien connu "Mécanique des milieux continus" [Moscou, 1944, §19; 2ème éd., 1953, §23, pp. 108–110; MR 16, 412], Landau et Lifšic ont publié la solution explicite du problème de la veine liquide noyée dans un liquide visqueux emplissant l'espace. Diverses publications ont attribué ce resultat aux auteurs précités. L'A. signale que le calcul en cause figure déja explicitement dans une note publiée par lui [Moskov. Gos. Univ. Uč. Zap. 2, 89–90 (1934)]. *J. Kravtchenko* (Grenoble).

SLEZKIN, N. A.

USSR/ Aeronautics - Fluid Mechanics

Card : 1/1

Authors : Slezkin, N. A., and Shustov, S. N.

Title : Stability of motion of a particle suspended in a laminary flow

Periodical : Dokl. AN SSSR, 96, Ed. 5, 933 - 936, June 1954

Abstract : The stability of motion of a particle suspended in a laminary flow was investigated with consideration of a lateral force proportional to the density, circulation and relative rate of flow around the particle. The necessity of considering the lateral force during the study of the motion of a particle in a laminary flow is dictated not only by the results of numerous investigations clearly showing the formation of a lateral force as result of a circulatory flow or as result of the presence of a natural body of rotation, but also by the fact that the formation of the very circulation in the flow is due to the viscosity effect of the liquid. Three references.

Institution : The F. E. Dzerzhinskiy Artillery Academy

Presented by : Academician, A. I. Nekrasov, March 11, 1954

SLEZKIN, N. A.

2000

1499. Slezkin, N. A., Dynamics of viscous incompressible fluid [Dinamika vjazkoi neszhimaemoi zhidkosti], Moscow, Gos. Izdat. Tekh.-Teor. Lit., 1955, 519 pp. 10 r. 90 k.

This attractive work originates in the author's lectures at the mechanicomathematical faculty of the Moscow University. It is written as a textbook for the students of hydrodynamics at Russian universities.

In the sense of the modern kinetic theory of fluids, the book emphasizes, on the one hand, the connection and analogies between the dynamics of a viscous liquid and, on the other, the development of the theory of elastic deformations in solids.

Considered are problems tractable by means of mechanical conceptions only; questions concerning the compressibility and heat conductivity of liquids cannot be treated in books of this kind. Problems illustrating theoretical considerations are carefully worked, beginning with their mathematicophysical formulation and up to a detailed analysis of the final solution. Special attention is paid to explaining various methods for simplifying the fundamental equations of motion in order to make them suitable for approximate solution.

The book opens with an extensive introduction concerning the historical development of hydrodynamics. The actual text is divided into 12 chapters with 97 subsections, and the volume ends with a rather complete nominal index, followed by a detailed list of matters treated. There are 109 instructive figures throughout the text. The study presupposes a reasonable knowledge in solving partial differential problems by classical methods as well as by means of the Laplace transformation.

1/2

SLEZKIN, N.A.

The following headings of separate chapters will give a more exact idea of the content: I. Deformation velocities of a particle. Components of stress. II. Differential equations of motion of a viscous liquid. III. General properties of motion of viscous fluids. IV. Cases of integrating exactly the differential equations of steady motion of viscous liquids. V. Motion of a viscous fluid for small Reynolds numbers. The Stokes method. VI. Hydrodynamic theory of lubrications. VII. Motion of a viscous liquid for small Reynolds numbers. The Oseen method. VIII. Theory of boundary layers. IX. Unsteady motion of a viscous incompressible fluid. X. Development of the laminar motion of liquids. XI. Stability of laminar flows. XII. Turbulent motion.

Presentation is clear and vivid, paper good, and print legible. Only a lot of unnecessary misprints and typographical oversights considerably disturb the intellectual enjoyment of reading this scientific work. Reviewer warmly recommends the book not only to specialists in the field of hydrodynamics but also to applied mathematicians and physicists.

V. Vodička, Czechoslovakia

2/2

RAW

SLEZKIN, N.A.

Flow of viscous liquid with a porous bottom as free boundary.
Vest. Mosk. un. Ser. mat., mekh., astron., fiz. khim., 12 no.5:
3-5 '57. (MIRA 11:9)

1. Kafedra gidromekhaniki Moskovskogo gosudarstvennogo universiteta.
(Fluid dynamics)

AUTHOR: SLEZKIN, N.A. (Moscow) 40-4-22/24

TITLE: On the Flow of a Viscous Liquid Between Porous Parallel Walls (O razvitii techeniya vyazkoy zhidkosti mezhdu parallel'nymi poristymi stenkami).

PERIODICAL: Prikladnaya Mat. i Mekh., 1957, Vol. 21, Nr 4, pp. 591-593 (USSR)

ABSTRACT: Stimulated by investigations of the boundary layer in which the walls are presupposed to be porous (see Wuest, Ing. Arch. 23,3,1955) the author considers the course of the flow of a viscous, incompressible liquid between two parallel porous walls in the stationary, plane case. Under partial consideration of acceleration and viscosity there hold the approximative equations

$$U \frac{\partial u}{\partial x} = - \frac{1}{\varrho} \frac{\partial p}{\partial x} + \nu \frac{\partial^2 u}{\partial y^2} , \quad \frac{\partial p}{\partial y} = 0 , \quad \frac{\partial u}{\partial x} + \frac{\partial v}{\partial y} = 0$$

with corresponding boundary conditions (U is the medium velocity in the cross section). With the aid of the Laplace transformation the author obtains rather complicated solutions for u and $p-p_c$ (p_c the external pressure, constant), furthermore a condition under which the pressure in the channel

CARD 1/2

only decreases.

SUBMITTED: March 19, 1957

AVAILABLE: Library of Congress

CARD 2/2

16(1)

AUTHORS: Skoryy, I.A., University Lecturer, and Kopytov, V.D., Scientific Assistant

SOV/55-58-2-33/35

TITLE: Lomonosov - Lectures 1957 at the Mechanical-Mathematical Faculty of Moscow State University (Lomonosovskiye chteniya 1957 goda na mekhaniko-matematicheskom fakul'tete MGU)

PERIODICAL: Vestnik Moskovskogo Universiteta, Seriya matematiki, mekhaniki, astronomii, fiziki, khimii, 1958, Nr 2, pp 241-246 (USSR)

ABSTRACT: The Lomonosov lectures 1957 took place from October 17 - October 31, 1957 and were dedicated the 40-th anniversary of the October revolution.
In the general meeting A.N. Kolmogorov, Academician spoke "On Approximative Representation of Functions of Several Variables by Superposition of Functions With Less Variables and ε-Entropy of Classes of Function". The lecture generalizes the results of Kolmogorov, A.G. Vitushkin, V.I. Arnol'd and V.M. Tikhomirov. The contents has been already published (Doklady Akademii nauk SSSR,114,5). Professor Kh.A.Rakhmatulin, Member of the Academy of Sciences of the Uz SSR, spoke on "Investigation of the Boundary Layer of the Motion of a two-Component Liquid".
The other lectures were given separately in the sections mechanics and mathematics. The following lectures were given.

1. Professor L.N. Sretenskiy, Corresponding Member, AS USSR : Propagation of Sound Waves From a Rotating Deformed Ball.
2. Professor G.G. Chernyy: The Flow Around Thin Truncated Bodies by Gas With High Supersonic Velocity.
3. Professor S.N. Nikiforov : Properties of the Calculation, Construction and Structure of Hydrotechnical Dikes on the Rivers of the Central Strip of the USSR.
4. Professor A.Ya. Sagomonyan : Penetration of a Rigid Body into the Ground.
5. M.Z. Litvinov-Sedoy, Senior Scientific Assistant : On the Synthesis of Control Circuits With Bounded Interval of Variation of the Controlled Variable.
6. V.A. Lomakin, Candidate of Physical-Mathematical Sciences : Scalar Plastic Metal Properties Under Variations of Structure.
7. Professor N.A. Slezkin : On Some Questions of the Flow Around Porous Walls.

Card 2/5

21-58-7-4/27

AUTHOR: ~~[illegible]~~

TITLE: On the Theory of the Initial Space of a Plane Laminar Jet of Liquid (K teorii nachal'nogo uchastka ploskoy laminarnoy strui zhidkosti)

PERIODICAL: Dopovidi Akademii nauk Ukrains'kci RSR, 1958, Nr 7, pp 702-706 (USSR)

ABSTRACT: Problems on the free and turbulent jets have been treated by Schlichting (Ref. 1) and Abramovich (Ref. 2) with the aid of the boundary layer equations. The solutions found, however, are not adequate for the initial space of a jet, because they do not take into account some factors. Therefore, the author expounds the theory of the initial space of a jet flowing into a semispace occupied by the same liquid using approximate equations in which the effects of acceleration and viscosity components are taken into consideration. The motion throughout the entire domain is assumed to be regular and plane parallel. The author derives approximate equations for a plane motion of a viscous incompressible liquid which are reduced, for the pressure, to the Laplace equation, and this is solved by Fourier's method. Analyzing the solution, the author states that the pressure proves to be variable, and a usually made assumption as to the constancy of pressure is applicable

Card 1/3

21-58-7-4/27

On the Theory of the Initial Space of a Plane Laminar Jet of Liquid

only for cases when the pressure in the cross section of the inflow aperture is equal to that of the medium at infinity. For this particular case, the author derives a simplified expression for the length of the jet core of almost constant velocities. The author solves the equation for the principal velocity component, a non-homogeneous equation of the one-dimensional theory of heat conductivity, using the methods of operational calculus. There are 5 Soviet references.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova (Moscow State University imeni M.V. Lomonosov)

Card 2/3

21-58-7-4/27

On the Theory of the Initial Space of a Plane Laminar Jet of Liquid

PRESENTED: By Member of the AS UkrSSR, A.Yu. Ishlinskiy

SUBMITTED: January 22, 1958

NOTE: Russian title and Russian names of individuals and institutions appearing in this article have been used in the transliteration

1. Liquid jets--Theory 2. Fourier's Series--Applications

Card 3/3

SOV/179-59-2-1/40

AUTHOR: Slezkin, N. A. (Moscow)

TITLE: On the Theory of Gas Flow in a Layer Between the Front of the Shock Wave and the Blunt Edge of a Rotating Body (K teorii techeniya gaza v sloye mezhdu poverkhnost'yu udarnoy volny i prituplennoy poverkhnost'yu tela vrashcheniya)

PERIODICAL: Izvestiya Akademii nauk SSSR OTN, Mekhanika i mashinostroyeniye, 1959, Nr 2, pp 3-12 (USSR)

ABSTRACT: A method of investigation of the shock wave is described in the article. The layer of gas is divided into the separate sections which are investigated consecutively, to which the linear equations are applied. The velocity of the gas U_∞ is considered as being directed along the axis of symmetry of the body, which is assumed to be stationary (figure on p 7). The formulae (1.1) are defined for an instant when the shock wave is affecting a layer (denoted by index A), the thickness of which is h . The maximum value of the modulus U_A is defined by Eq (1.2). The relationship of viscosity and density μ/ρ in the layer is not the same as μ_∞/ρ_∞ , as $T_a > T_\infty$, $\rho_A > \rho_\infty$ due to the increase of the coefficient of viscosity together with an increase of temperature, i.e. $\mu_A > \mu_\infty$. Therefore, it can be taken that

Card 1/4

number obtained from Eq (2.2) will describe the motion of gas in the layer, the parameters of which are shown in Eqs (2.6). In order to transform the formula (2.2) into the linear equations, the variables (3.1) are substituted into Eq (2.2). Thus the formula (3.7) can be derived, which can also be written as Eq (3.8), when $\rho_1 = 1 + \varepsilon\rho$ (Eq 3.5).

The dynamic conditions of the front of the wave, in general are defined as Eq (4.1), which in the case of a plane wave, can be shown as Eqs (4.2), (4.3) and (4.4). The projection of the vector of the tension on the normal τ_{nn} and the tangent τ_{ns} is given in Eq (4.5) which becomes Eq (4.6) for the parameters (2.1). The expression (3.6) for the particular case when the density varies, can be written as Eq (5.1) for the conditions (5.2). Its solution can be shown as Eqs (5.3) to (5.6) with the characteristic values U_B and T_B shown in Eqs (5.9), while the approximate value of density can be calculated from Eq (5.10). When the distance is taken as that of the wider part of the layer, the velocity

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On the Theory of Gas Flow in a Layer Between the Front of the Shock Wave and the Blunt Edge of a Rotating Body

U_B increases together with an increase of the Reynolds number (Eq 5.11), while the latter decreases near the axis of symmetry. Thus the above equations define more accurately the conditions at the point near the axis. These conditions can be found from the above equations when $x = 0$, $\beta = 1/2\,\pi$ and $\theta = 1/2\,\pi$ are substituted in Eqs (6.1) and (6.4). Then Eq (5.6) can be written as Eq (6.5) and the final formula (6.16) can be derived, which describes the required conditions. There is 1 figure and 8 Soviet references.

SUBMITTED: February 17, 1958.

Card 4/4

SLEZKIN, N.A.

Applying Oseen's method to plane problem in the flow of a heated gas. Vest Mosk. un. Ser. mat., mekh., astron. fiz., khim. 14 no.2: 39-42 '59 (MIRA 13:3)

1. Kafedra aeromekhaniki i gazovoy dinamiki Moskovskogo gosuniversiteta.
(Gas flow)

L 16728-63 EPR/EPA(b)/EPF(c)/EWT(l)/EPF(n)-2/BDS AFFTC/ASD/IJP(C)/SSD
Ps-4/Pd-4/Pr-4/Pu-4 WW S/124/63/000/004/015/064

AUTHOR: Slezkin, N. A.

TITLE: On use of linearized equations for studying motion of gas, with allowance for viscosity and heat conductivity

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 4, 1963, 71, abstract 4B488 (Bull.math. Soc. sci. math. et phys. RPR, 4, no. 1, 1960, 85-92)

TEXT: Concepts on the possibility and expediency of using linearized equations, particularly the Reynolds and Ozeyen type ones, for studying currents in the layer of a viscous and heat-conducting gas are presented. A conclusion is given for four different systems of such equations and a brief survey is made of reports by the author in which the pertinent equations were used for solving actual problems. S. M. Targ.

[Abstracter's note: Complete translation.]

Card 1/1

NEKRASOV, Aleksandr Ivanovich [deceased]; PAVLIKHINA, M.A.; SEKERZH-ZEN'KOVICH, Ya.I., otv. red. toma; KRASIL'SHCHIKOVA, Ye.A., red.; SLEZKIN, N.A., red.; SMIRNOV, L.P., red.; RYVKIN, A.Z., red. izd-va; ASTAF'YEVA, G.A., tekhn. red.

[Collected works] Sobranie sochinenii. Moskva, Izd-vo Akad. nauk SSSR. Vol.1. 1961. 442 p. (MIRA 15:1)
(Aerodynamics) (Hydrodynamics)

NEKRASOV, Aleksandr Ivanovich, akademik; PAVLIKHINA, M.A.; TUPOLEV, A.N., akademik, otv. red. toma; KRASIL'SHCHIKOVA, Ye.A., red.; SEKERZH-ZEN'KOVICH, Ya.I., red.; SLEZKIN, N.A., red.; SMIRNOV, L.P., red.; GORSHKOV, G.B., red.izd-va; NOVICHKOVA, N.D., tekhn. red.

[Collected works]Sobranie sochinenii. Moskva, Izd-vo Akad. nauk SSSR. Vol.2. 1962. 706 p. (MIRA 15:12)
(Physics) (Mechanics) (Mathematics)

SLEZKIN, N.A., doktor fiz.-matem.nauk, prof.; KORZHAYEV, S.A.

Method for designing hydraulic and pneumatic conveying units suggested by A.E. Smoldyrev. Izv. AN SSSR. Otd.tekh.nauk.Mekh. i mashinostr. no.1:198-200 Ja-F '62. (MIRA 15:3)

1. Moskovskiy gosudarstvennyy universitet.
(Hydraulic conveying)(Pneumatic-tube transportation)

SLEZKIN, N.A.

Kinematic and dynamic characteristics of a polyatomic molecule. Vest.Mosk.un.Ser. 1: Mat., mekh. 18 no.3:72-81 My-Je '63. (MIRA 16:6)

1. Kafedra gidrodinamiki Moskovskogo universiteta. (Molecular dynamics)

L 37655-65 EWP(m)/EWT(1)/FCS(k)/EWA(d)/EWA(1) Pd-1

ACCESSION NR: AP4047612 S/0055/64/000/005/0067/0078 20 19 B

AUTHOR: Slezkin, N. A.

TITLE: On the boundary layer near a plate in a flow with jet separation

SOURCE: Moscow. Universitet. Vestnik. Seriya 1. Matematika, mekhanika, no. 5, 1964, 67-78

TOPIC TAGS: approximate differential equation, boundary layer problem, jet separation, plate edge, Reynold's equation

ABSTRACT: Approximate differential equations are derived in curvilinear coordinates for a two-dimensional gas flow in a thin layer. The velocity potential and the stream function of the flow of an incompressible fluid with the separation of free streamlines from the edges of the plate are considered as such coordinates. The solution of the approximate generalized Reynolds equations is given and the formula for the thickness of the boundary layer is established.

Card 1/2

L 37655-65

ACCESSION NR: AP4047612

ASSOCIATION: Moskovskogo universitet, kafedra gidromekhaniki (Moscow University, Department of Hydromechanics)

SUBMITTED: 29Jan64 ENCL: 00 SUB CODE: ME

NR REF SOV: 002 OTHER: 000

Card 2/2

SLEZKIN, N.A.

Remarks on K.P. Strashinina's articles. Izv. AN SSSR. Mekh. no.1: 203-205 Ja-F '65. (MIRA 18:5)

SLEZKIN, V.A.

Experience in the use of values in gas pipelines. Gaz. prom. 4 no.3:50-51 Mr '59. (MIRA 12:5)
(Gas, Natural--Pipelines) (Valves)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651320010-2"

SLEZKINA, A.

Fron the whole heart. Prom.koop. 13 no.1:35 Ja '59. (MIRA 12:2)

1. Chlen arteli invalidov "Neva," Leningrad.
(Vocational rehabilitation)

SLEZKINA, A. N.

Agriculture & Plant & Animal Industry.

Hog farm of the "Smychka" State Farm. Saratovskoe obl. gos. izd-vo, 1951.

9. Monthly List of Russian Accessions, Library of Congress, April 1952, Uncl.

KLYUCHIKOV, V.N.; SLEZKINA, L.I.; KOPSHITSER, I.Z.; SHUSTIKOVA, A.G.

Clinical and genealogical studies of the family of a patient with Thomsen's myotonia. Zhur. nevr. i psikh. 63 no.9:1313-1319 '63. (MIRA 17:8)

1. Klinika nervnykh bolezney Yaroslavskogo meditsinskogo instituta (zav. kafedroy - dotsent V.N. Klychikov) i nervnoye otdeleniye (zav. A.G. Shustikova) gorodskoy bol'nitsy No. 68 (glavnyy vrach V.M. Knyazev), Moskva.

LOBATSEVICH, N.; SLEZKINA, N.

Straight amplification receiver. V pom. radioliub. no.12:15-20 '62. (MIRA 16:10)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001651320010-2"

SLEZKOVA, V. A. Cand Med Sci -- (diss) "On the problem of clinical pathophysiological peculiarities during the course of severe forms of epilepsy. (According to observations in children's clinic)." Mos, 1957. 14 pp (Inst of Psychiatry, Min of Health USSR), 200 copies (KL, 44-57, 101)

SLEZKOVA, V.A.

SLEZKOVA, V.A.

On the problem of so-called "subclinical seizures" in severe types of epilepsy [with summary in French]. Zhur.nevr. i psikh. 57 no.7: 876-880 '57. (MIRA 10:9)

1. Institut psikhiatrii Ministerstva zdravookhraneniya SSSR (dir. - prof. D.D.Fedotov), Moskva

(EPILEPSY, case reports.

subclin. seizures in severe cases (Rus))

SLEZKOVA, V.A., YANOVICH, F.P., KOLBINA, M.S.

School sanatorium for nervous children in Frunze District.
Zhur. nevr. i psikh. 58 no.7:896 '58 (MIRA 11:7)
(FRUNZE DISTRICT--HANDICAPPED CHILDREN)

SLEZNEVA, N.D., kand.med.nauk

Pneumoperitoneum and endoscopic methods of examination in gynecology. Med.sestra 22 no.3:35-39 Mr'63. (MIRA 16:6)

1. Iz Instituta akusherstva i ginekologii Ministerstva zdravookhraneniya RSFSR, Moskva.
(PNEUMOPERITONEUM, ARTIFICIAL) (ENDOSCOPY)
(GYNECOLOGY)

ONUFRIYEV, I.A., inzhener, otvetstvennyy redaktor; BAUMAN, V.A., kandidat tekhnicheskikh nauk, redaktor; DOMBROVSKIY, N.G., doktor tekhnicheskikh nauk, professor, redaktor; IVANOV, V.A., inzhener, redaktor; KOMISSAROV, A.V., inzhener, redaktor; KONOROV, A.V., professor, redaktor; TROITSKIY, Kh.L., kandidat tekhnicheskikh nauk, redaktor; SLEZNIKOV, G.I., inzhener, redaktor; PUL'KINA, Ye.A., tekhnicheskiy redaktor; DAKHNOV, V.S., tekhnicheskiy redaktor

[Handbook of construction mechanics] Spravochnik mekhanika na stroitel'stve. Moskva, Gos. izd-vo lit-ry po stroit. i arkhitekture, 1951. 1064 p. [Microfilm] (MIRA 10:2)

1. Russia (1923- U.S.S.R.) Gosudarstvennyy komitet po delam stroitel'stva.
(Building machinery)

BAB[illegible], S.I., kandidat tekhnicheskikh nauk; B[illegible], R.N., professor,
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professor, doktor tekhnicheskikh nauk; STOLBIN, G.B., kandidat
tekhnicheskikh nauk; TAYTS, B.A., kandiat tekhnicheskikh nauk;
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(Continued on next card)